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KRIEGSMAN & KRIEGSMAN
30 TURNPIKE ROAD, SUITE 9
SOUTHBOROUGH, MA 01772

EXAMINER	
KOKKINOS, NICHOLAS C	
ART UNIT	PAPER NUMBER
1794	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,193	TSAI ET AL.	
	Examiner	Art Unit	
	NICHOLAS KOKKINOS	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *104-109,111,112,117 and 164-172* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *104-109,111,112,117 and 164-172* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2 June 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20071123 and 20090710*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 104-109, 111, 112, and 117 in the reply filed on 10 July 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 149, 150, and 157 (*Group II*) have been cancelled. Claim 158 has been cancelled (*Group III*). Claims 159-163 have been cancelled (*Group IV*).

3. Claims 164-172 have been added and read on the invention of Group I.

Drawings

4. The drawings are objected to because they are informal hand drawings, which makes the lines and characters difficult to read, and could cause errors during printing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application (*PCT/US00/17703*) or patent (*EP 819,726*), or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

6. The use of numerous trademarks has been noted throughout this application. Trademarks should be capitalized wherever it appears and be accompanied by the generic terminology.

7. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

8. Claims 165 and 167 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 165 recites that the adhesive layer has a thickness of “about 200 microns”, and claim 167 recites that the adhesive layer has a thickness of "about 80 microns." In both cases this expands the range of their parent claims (*164 and 166*) to levels above their upper limits (*200 microns, 80 microns*), which includes values slightly above 80 and 200 microns.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 104-109, 111, 112, 117, 149, 150, and 157-163 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

11. Claim 106 was amended on 2 June 2005 to include the limitation “not exceeding about 1 micron.” There is no support for the broader language of "about 1 micron." Also, there is no support for the claim language of "not exceeding 1 micron,” only for the language “less than 1 micron.”

12. Claim 117 was amended on 2 June 2005 to include the limitation “wherein said ink design layer further comprises a design made using a non-crosslinked polyvinyl chloride ink. While there is support for making the ink design layer marking of claim 111 by thermal transfer printing, ink jet printing, and laser printing (*page 35*), and there is support for designs of non-crosslinked PVC ink (*page 29*), it is unclear where support exists for an ink design layer that comprises both of these features simultaneously. The description describes the above layers as being of different compositions, and they are present in separate embodiments. It is not clear where support is found for the narrower instant claim language.

13. Claims 164-172 were presented in the amendment filed 10 July 2009. Several issues are present.

14. Claim 165 recites that the heat-activatable adhesive has a thickness of about 200 microns. Although supports exists in the specification to support the broad limitation of 10-200 micron thickness (*page 20*), there is no support for the narrower limitation of about 200 microns as instantly claimed.

15. Claim 167 contains new matter for the same reason of claim 165 above. Namely, although there is support (*page 20*) for broadly claiming that the adhesive layer may have a thickness of 20 to 80 microns, there is no support for the narrower limitation of about 80 microns as instantly claimed.

16. Claim 168 recites that the release coating is positioned “directly on top of" the carrier, however, the specification only provides for the broader limitation of “a release coating positioned over said carrier” (*page 5*).

17. Claims 171 and 172 recite further new limitations that do not find support in the specification. Applicant is invited to point out where in the specification each limitation finds support under 35 U.S.C. 112, first paragraph.

18. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

19. Claim 117 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

20. Claim 117 recites that the ink design layer further comprises a design made "using" a non-cross-linked polyvinyl chloride ink. It is unclear what this entails. Is the word “using” being presented to denote a design that “includes” or "comprises" these polyvinyl compounds? Or is "using" a term that is intended to encompass a product by process limitation (*polyvinyl chloride is used as an ingredient to form some other composition, which is added as an ink to the design*)?

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

23. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

24. Claims 104-106, 111, 112, 171, and 172 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,296,444 to Saiki et al. in view of USPN 5,514,516 to Vanmaele.

25. Regarding claim 104, Saiki teaches a heat-transfer label (*heat-melt transfer medium, title, also depicted in Fig. 4*) suitable for labeling fabric (*cloth goods, column 1, lines 5-11*). The heat-transfer label (*Fig. 4*) comprises a support portion (*foundation 1*) and a transfer portion (*includes release layer 2, heat meltable ink layer 3, and adhesive layer 4*). The transfer portion is positioned over said support portion for transfer of the transfer portion from the support portion to an article of fabric (*see Fig. 5, after a master is created, the image may be transferred to fabric substrate 9*). As above, the transfer portion comprises an ink design layer and a heat-activatable adhesive layer (*the adhesive may be "activated" by being melted by heat, column 8, lines 3-8*). The heat-activatable adhesive layer has a thickness of 0.2 to 3 μm (*column 8, lines 11-12*). Because the surface roughness of the adhesive layer cannot possibly be greater than the total thickness of the adhesive layer, the claimed structure wherein the heat-activatable adhesive layer has a surface roughness not exceeding about 10 microns is deemed to be inherent.

26. The limitation "wherein said ink design layer is directly printed onto said heat-activatable adhesive layer" is a method limitation and does not determine the patentability of the product, unless the process produces unexpected results. The method of forming the product is not germane to the issue of patentability of the product itself, unless applicant presents evidence from which the examiner could reasonably

conclude that the claimed product differs in kind from those of the prior art. See MPEP § 2113. Furthermore, there does not appear to be a difference between the prior art structure and the structure resulting from the claimed method because Saiki discloses (*Fig. 4*) that the ink layer is in contact with the adhesive layer, so this would be the same as being "printed" on.

27. Saiki does not teach that the ink design layer comprises a thermochromic ink design. Vanmaele teaches that for thermal dye sublimation transfers such as those of Saiki, the dye may be a thermochromic dye (*column 3, lines 1-15*).

28. The disclosures of Saiki and Vanmaele are analogous art, because each discusses dyes for thermal transfers. In particular, Saiki discusses thermal transfers for fabrics (*column 1, lines 5-11*), and Vanmaele teaches that the disclosed dyes are suitable for transfer printing on fabrics (*column 23, lines 1-3*). It is clear from these two disclosures that the instantly claimed invention would have been obvious to one of ordinary skill in the art at the time of invention by way of simple substitution of one known element for another to obtain predictable results (*MPEP § 2143*). This is in light of the finding that Saiki teaches a thermal transfer that differs from that claimed only by the substitution of the thermochromic dye of Vanmaele. One of ordinary skill in the art could have substituted the thermochromic dye of Vanmaele for the dye of Saiki, and the result would have been predictable, because both disclosures are directed to the same thing (*thermal transfers*), and Vanmaele discloses that the dyes may be used for fabrics.

29. Regarding claim 105, Saiki teaches that the heat-activatable adhesive layer has a total thickness of 0.2 to 3 μm. This means that the surface roughness must inherently

be less than 3 μm, because the roughness of the layer cannot be greater overall dimension of the layer (*otherwise, the layer would be penetrated and rendered inoperative*). It can thus be concluded that the heat-activatable adhesive layer of Saiki inherently has a surface roughness not exceeding about 5 microns.

30. Regarding claim 106, the total thickness of the adhesive layer of Saiki is 0.2 to 3 μm. Any thickness in this range between 0.2 and 1 μm would inherently have a surface roughness not exceeding about 1 micron, for the reasons discussed above.

31. Regarding claims 111 and 112, Saiki teaches that the heat-transfer label may include further ink and adhesive layers positioned on top of the ink design layer (*Fig. 7*). These extra layers form a marking on the original ink design layer. The entire structure is formed by thermal printing (*Figs. 4 and 5, note that only one layer is shown here, but the process as depicted would just as easily be applied to the structure of Fig. 7*).

32. Regarding claim 171, Saiki teaches that the periphery of the ink design layer does not exceed the periphery of the heat-activatable adhesive layer (*their edges are even in Fig. 4*).

33. Regarding claim 172, Saiki teaches that the ink design layer may comprise first and second markings (*see Fig. 6, which shows multiple color markings Yellow, Magenta, and Cyan*). The markings are formed by thermal transfer printing as depicted in Fig. 4.

34. Claims 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,296,444 to Saiki et al. in view of USPN 5,514,516 to Vanmaele, and further in view of USPN 5,766,397 to Jones.

35. Regarding claim 107, Saiki in view of Vanmaele teaches the heat-transfer label of claim 104 as outlined above. Saiki in view of Vanmaele does not teach that the heat-activatable adhesive layer comprises one of a polyester, polyamide, or polyvinyl chloride.

36. Jones teaches a similar heat-transfer label (*see column 3, also note Figs. 1-3, which show the label*), and notes that the adhesive layer of the label may comprise either a polyester or polyvinyl chloride adhesive (*column 3, lines 64-67 and column 4, lines 1-2*).

37. The disclosure of Jones is directed to heat-transfer labels (*column 3*), and is hence analogous to the disclosures of Saiki and Vanmaele. Jones discusses that the technology of thermal transfer labels, while successful when high temperatures are permissible, can damage the underlying fabric surface if the application demands more sensitive materials (*column 3, lines 11-33*). In particular, polyester fabrics, commonly found in vehicle interiors, are susceptible. Jones suggests that the incorporation of an composite adhesive system, in which layers of polyester or PVC adhesive are combined with polyurethane to lower the required melting temperature, hence allowing use on more sensitive fabrics. It would have been obvious to one of ordinary skill in the art at the time of invention select a polyester or PVC adhesive layer along with a polyurethane

layer as suggested by Jones in order to lower the required melting temperature of the heat-transfer label.

38. Claims 108 and 109 are obviated as discussed above, because Jones teaches polyester or PVC resins.

39. Claim 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,296,444 to Saiki et al. in view of USPN 5,514,516 to Vanmaele, and further in view of USPN 5,573,834 to Stahl.

40. Regarding claim 117, Saiki in view of Vanmaele teaches the heat-transfer label of claim 111. The ink design layer of Saiki in view of Vanmaele does not comprise a design made using a non-cross-linked polyvinyl chloride ink.

41. Stahl teaches that for the graphics in thermal transfer application, the inks in the design layer may include non-cross-linked PVC inks of similar composition to those used by applicant (*column 3, lines 41-54*). The inks are blown in order to cause them to split during application to the fabric, and so do not require crosslinking. The ink comprises the same materials as that discussed by applicant on page 29 of the specification (*applicant uses Geon 137, while Stahl uses Geon 138, these are both of the same series of PVC resins, see the cited website from PolyOne Corporation*).

42. Stahl teaches that the selection of the disclosed PVC ink allows for a graphic layer that adheres to a polyester release sheet (*such as that discussed by Jones*), and that there is no shifting or lifting during the application process (*column 2, lines 65-67 and column 3, lines 1-2*). It would have been obvious to one of ordinary skill in the art at

the time of invention to select a non-crosslinked PVC ink, as suggested by Stahl, to include in the design layer so that the structure was stable and does not shift or peel prematurely while the graphic is being applied to a shirt or fabric.

43. Claims 164-167 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,296,444 to Saiki et al. in view of USPN 5,514,516 to Vanmaele, and further in view of USPN 6,261,734 to Platzer.

44. Regarding claims 164-167, Saiki in view of Vanmaele teaches the heat-transfer label of claim 104, but does not disclose that the heat-activatable adhesive layer may have thickness in the ranges of about 10 to 200 microns (*claim 164*), about 200 microns (*claim 165*), about 20 to 80 microns (*claim 166*), and about 80 microns (*claim 167*).

45. The disclosure of Platzer is analogous art, because it addresses the technology of thermal transfer printing (*column 2, lines 50-67 and column 3, lines 1-39*). Although the medium addressed by Platzer (*paper*) is different, the structure and methods are the same as those discussed by Saiki and Vanmaele. Platzer teaches that when printing, the layer of adhesive should be adjusted to regulate the dot size of the final printed proof image (*column 7, lines 57-67*).

In light of the above discussion, the exact thickness of the heat-activatable adhesive layer is deemed to be a result effective variable with regard to the dot size, or image resolution of the final printed product. It would require routine experimentation to determine the optimum value of a result effective variable, such as adhesive thickness, in the absence of a showing of criticality in the claimed adhesive thickness (*thicker*

adhesive produces larger dots and lower resolution, while thinner adhesive produces smaller dots and higher resolution). *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). One of ordinary skill in the art would have been motivated by Platzer to adjust the adhesive thickness in order to produce the desired dot size in the final printed product.

46. Claims 168-170 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,296,444 to Saiki et al. in view of USPN 5,514,516 to Vanmaele, and further in view of USPN 5,456,969 to Suzuki et al.

47. Regarding claim 168, Saiki in view of Vanmaele teaches the heat-transfer label of claim 104 as outlined above, but does not teach that the support portion comprises a carrier and a release coating positioned directly on top of the carrier, with the release coating being made of a non-wax, non-silicone release material.

48. Suzuki discloses that rather comprising a single layer (*foundation 1, Fig. 4*) as in the structure of Saiki, the support layer may comprise a compound of layers (*column 4, lines 21-29*). Selecting, for instance, a polypropylene in compound with a fluorine resin film would form a two-layer foundation layer. This would form the structure of claims 168-170, because the carrier (*polypropylene*) would have a release layer (*the fluorine resin layer*), and on top of that would remain the wax release layer of Saiki, and on top of that would remain the heat-activatable adhesive layer of Saiki.

49. The disclosure of Suzuki is analogous art because it is directed towards thermal transfer sheets (*title*). It is clear that the above discussion constitutes an instance of

simple substitution of one known element for another to obtain predictable results (*MPEP § 2143*). This is in light of several findings. First the prior art contains a product (*laminate of Saiki in view of Vanmaele*) that differs from the claimed device because it comprises a carrier with a single layer. Second, the substitution of multiple layers is known (*Suzuki*). Third, because the layers of Suzuki and Saiki are similar in structure and composition, one of ordinary skill in the art could have substituted one known element for another, and the results of the substitution would have been predictable. Thus it would have been obvious to one of ordinary skill in the art at the time of invention to simply substitute the carrier of Suzuki for the carrier of Saiki to form the instantly claimed structure.

Conclusion

50. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS KOKKINOS whose telephone number is (571) 270-7384. The examiner can normally be reached on Monday-Thursday 9am-5pm.

51. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

52. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NK/
29 August 2009

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794